Air Quality and Energy

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Presentation Overview

- \angle The importance of PM_{2.5} a multiple pollutant
- We are moving to implement the new NAAQS
 - Most cost-effective approaches first
 - What we know best
 - This means Regional strategies first
- The Clear Skies Initiative
 - A new regulatory baseline for power generation
 - Overview of expected reductions and air quality benefits
- Renewables and Energy Efficiency for the long term

We are ready to begin implementing the new $(1997) \text{ PM}_{2.5}$ and 8-hour ozone Standards

Litigation issues are resolved.

- Supreme Court rejected "Unconstitutional Delegation" argument (Feb. 2001)
- Court of Appeals for D.C. Circuit ruled Standards not "arbitrary and capricious" (March 2002)
- Science behind the Standards was not questioned by the Court.

Ozone Health Effects

- Can reduce lung function
- Can aggravate asthma
- Can inflame and damage cells lining lungs
- Can aggravate chronic lung diseases
- Can reduce ability of immune system to fight off respiratory infections
- May cause permanent lung damage

Health effects from Fine Particles are even more serious. . .

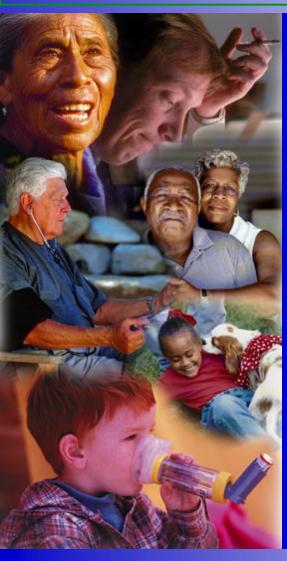
Fine particles cause:

- Tens of thousands of premature deaths from heart and lung disease;
- Tens of thousands of hospital admissions and emergency room visits;
- Millions of school and work absences due to aggravation of asthma and other lung and heart diseases, and;
- Reduced visibility in cities, national parks, and other scenic areas.

As Fine Particle levels increase, risk increases for:

- Premature death from heart and lung disease
- Aggravation of heart and lung diseases, with increased hospitalizations, doctor visits, and use of medication
- Coughing, wheezing, and chronic bronchitis
- - Lung cancer mortality
 - Infant mortality

Some Groups of People are Particularly at Risk for PM_{2.5}



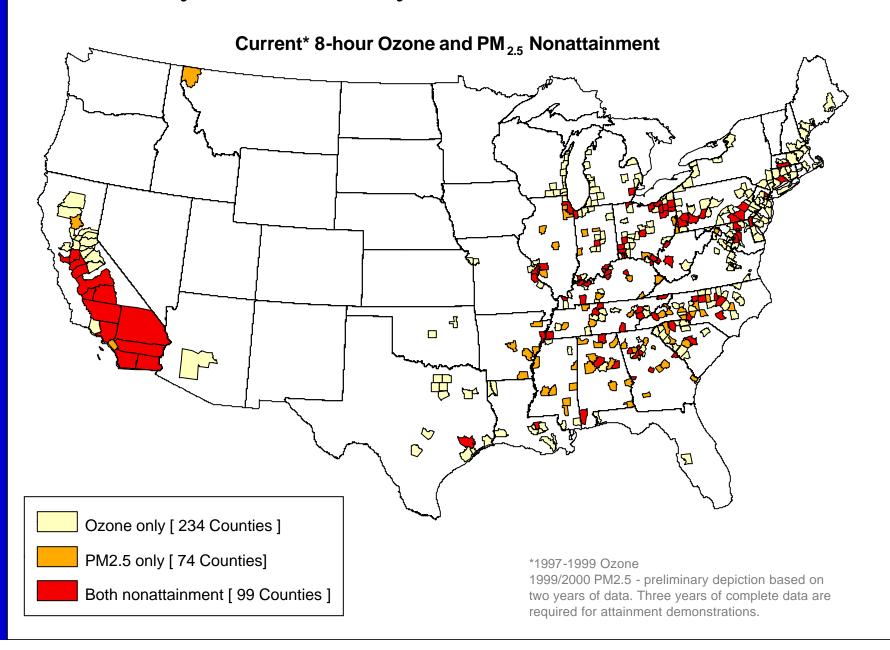
✓ People with heart or lung disease

Elderly

EChildren

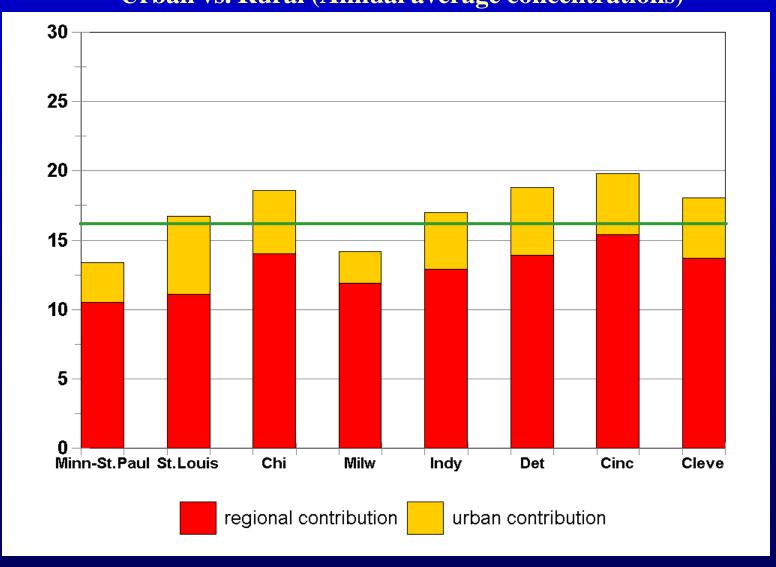
These groups each include tens of millions of people, together representing over 40% of the U.S. population.

Many areas are likely to violate these Standards.

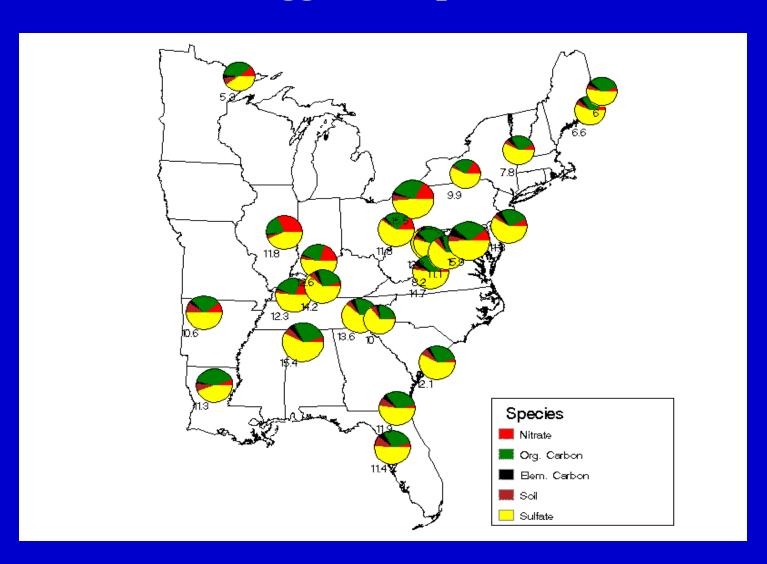


What do we know about PM_{2.5}? Transport is a significant issue.

Urban vs. Rural (Annual average concentrations)

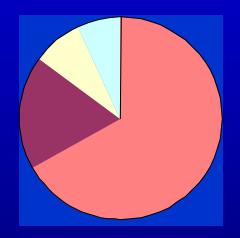


What do we know about PM_{2.5}? Sulfate is the biggest component in the East.

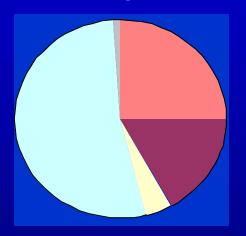


A Major Source of Emissions Electric Power Generation:

1998 Sulfur Dioxide



1998 Nitrogen Oxides



- electric utilities
- **■** Fuel Combustion **■** Industrial Processing
- Other stationary combustion *
- **■** Transportation
- **■** Miscellaneous

^{*} Other stationary combustion includes residential and commercial sources

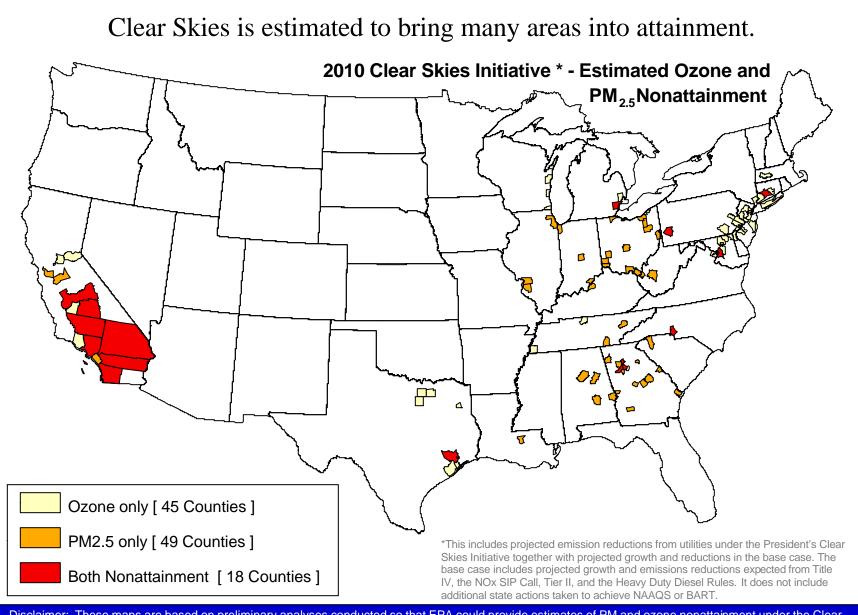
We need National/Regional and local strategies to reduce emissions

National/Regional
Clear Skies Initiative
Interstate Transport Analysis for SOx and NOx
Mobile source standards (non-road)
Local Programs

Diesel Retrofits
Reduced diesel idling
Woodstove retrofits
Etc.

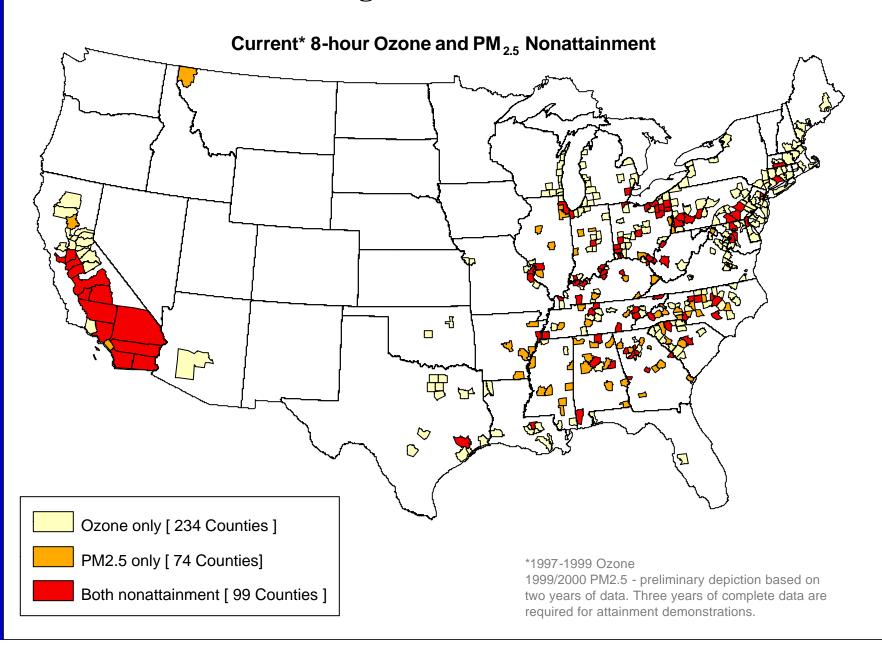
The Clear Skies Initiative is a major priority

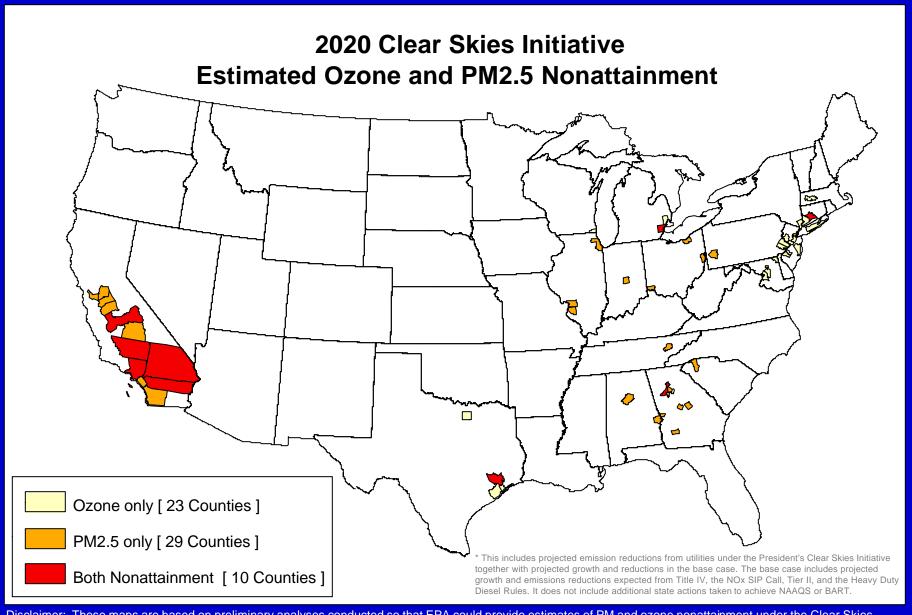
- Sets mandatory caps on SO₂, NOx, and mercury
- Results in significant power plant remission reductions from 2001 level.
 - $-SO_2 73\%$
 - NOx 67%
 - Mercury 69%



Disclaimer: These maps are based on preliminary analyses conducted so that EPA could provide estimates of PM and ozone nonattainment under the Clear Skies Initiative for the 4/23/02 meeting of the Environmental Council of the States. These preliminary maps will be refined with more sophisticated atmospheric modeling which may alter the attainment status of specific counties. These maps are likely to understate the extent of future nonattainment for PM. The maps should be used in a relative sense to compare nonattainment trends under different control strategies.

Predicted violating counties without Clear Skies





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We are also preparing PM_{2.5} Interstate Transport Analysis

- It is essential to pursue regional reductions to achieve public health protection
- We are developing the technical basis for a possible Interstate Transport Rule
 - Investigating modeling approaches
 - Updating inventories
 - Determining appropriate technical analyses
- ∠Plan to propose in 2005/2006

These programs will help the States meet the required attainment dates

	PM	Ozone
EPA Designate areas	2004-5	2004
States submit SIPS	2007-8	2007
Attainment Date	2009-10*	
Marginal		2007
Moderate		2010
Serious		2013
Severe		2019-21

^{*}Potential 5 year extension with two additional one year extensions for local problems.

For the longer term, we need to encourage more energy efficiency and renewable energy approaches

- Currently working with Texas to give SIP Credit for energy efficiency.
- Have developed a draft "Innovative Measures Policy" to establish a mechanism to provide SIP Credit for new approaches.
 - Requires a strong evaluation to determine if the innovative measures are working.
 - Limits SIP Credit available because of uncertainty associated with innovative measures.

In Summary....

- We're ready to implement the PM_{2.5} and 8-hour ozone standard.
- \angle The health effects of PM_{2.5} are especially severe.
- Many areas are likely to violate the Standards.
- We need a mix of National/Regional and local measures.
- Clear Skies Initiative will significantly reduce power plant emissions.
- For the long term, we need to encourage energy efficiency and renewable energy.